A Wider Net

New technology could help narrow the information gap between the developed and developing worlds

BYLINE: Jennifer L. Schenker

According to science fiction writer Arthur C. Clarke, connecting every village on the globe with modern telecommunications technology would be one of the most effective economic and social stimulants in history. Now, the spread of telecoms networks to the remotest corners of the planet promises to make this vision a reality.

A 50-member farming cooperative near Cuzco in Chincheros, Peru, increased its monthly income fivefold--from $ 300 for the whole village to $ 1,500--after it connected to the Internet and established an online partnership with an international export company. Farmers in Sri Lanka are using the Internet to get information about produce prices in Colombo to negotiate better rates with brokers, increasing their income by as much as 50%. In Papua New Guinea, the Internet is being used to disseminate the knowledge of village elders, who can forecast storms weeks in advance by observing physical changes in plants and animals. And in Africa, the Internet is helping to avert famine by making farmers aware of the state of crops throughout particular regions or countries. "We are at the absolute earliest stages of

this revolution," says James Deane, executive director of the Panos Institute, a London-based think tank on developing countries, "but the opportunities are huge."

So far, though, according to the 1999 Human Development Report issued by the United Nations, information technology is actually widening the gap between the world's haves and have-nots, not narrowing it. More than half the GDP in the major O.E.C.D. countries is now knowledge-based, the report states. Writing computer programs and unraveling genetic codes have replaced manual labor as the path to economic growth--and the developing world remains deprived of the skills necessary to succeed in these new markets.

A few statistics make this point startlingly clear. There are more Internet account holders in London than in the whole of Africa. About 80% of the world's population has no access to reliable telecommunications and about one-third has no access to electricity, according to the Panos Institute. And more than half the population in low-income countries is illiterate, with a far greater proportion unable to read English, the main language on the World Wide Web.

The consequences of this technology lag are serious because, over the next decade, 30% of the world's economic growth and 40% of new employment will be driven by information technology. A plethora of new initiatives has emerged to try to close the gap, but opinions differ about what donor organizations should do to help roll out telecommunications to the developing world. The debate centers on priorities. How important is Web access, for example, in an area without food or safe drinking water? While some health workers praise the connections that bring cheap access to health information, others argue that they need penicillin more than Pentium-powered computers. And for some schools the Internet means expanding horizons, but others worry it will divert resources away from hiring teachers.

Analysts agree that it is unrealistic to expect that every family can be equipped with a computer--or even that every home can be linked to telecommunications infrastructure or an electricity grid. The U.N. report notes that buying a personal computer costs the average U.S. citizen about a month's pay, compared to eight years' worth of wages for a citizen of Bangladesh. Yet innovative experiments suggest it is possible to link the world's remotest villages to the Internet at affordable prices. And telecenters may be one way to do it.

The idea is to put one telecenter--equipped with Internet access, phone and fax--in each village, says Gaston Zongo, the Dakar, Senegal-based executive director of Acacia, a sub-Saharan initiative run by Canada's International Development Research Center (I.D.R.C.), to supplement the roughly 9,000 privately owned teleshops already operating in Africa. The shops offer basic phone service, with some also offering Internet access and e-mail. Acacia is now focusing on using development funds to set up community-based telecenters in Mali, Uganda, Mozambique, Benin and Burkina Faso. These telecenters can be used for training doctors in rural areas, bringing educational materials to schools, disseminating

information on crop management and setting up trade points for locals to sell products on the Internet.

But ways must be found to ensure that telecenters are not mere demonstration projects that collapse when funds are exhausted or key people depart. To that end, Acacia, Canadian telecommunications equipment manufacturer Nortel and the International Telecommunication Union (I.T.U.) announced the development of two "African Centers of Excellence" to train policymakers and regulators on how to develop market rules and management expertise conducive to private sector investment.

Turning telecenters into viable business models is also the focus of a project in Asia sponsored by the I.D.R.C. and Mohammed Yunus, founder of the Grameen Bank in Bangladesh and pioneer of micro-credit. Yunus separately has launched GrameenPhone, which brings affordable mobile telephony to Bangladesh's villages by providing low-cost loans to rural women to set up teleshops. The Village Internet Program with I.D.R.C. will provide telecenters called cyberkiosks to rural villages.

Owners of the cyberkiosks will earn money from offering computer classes and selling services such as e-mail, word processing, printing and desktop publishing. If regulations allow, the kiosks could also offer Internet telephony as a way of avoiding high international phone charges. Villagers will also get access to national and international job databases, information about disease prevention and early warnings of natural disasters. Village artisans could benefit by being able to check current market prices on the Internet, cutting out middlemen who buy at low prices and sell at a large profit to urban populations. Through the use of digital cameras, local craftsmen could also use the kiosks as e-commerce sites to display and sell their products over the Internet.

The challenge, though, is to connect telecenters in villages that don't have telecommunication links or electricity. A project in Pondicherry, India, sponsored by the M.S. Swaminathan Research Foundation relies on solar-powered computers that are updated daily with information relayed from the Internet through radio handsets and cell phones. The village computer acts as bulletin board for everything from stocks of medicines in health centers to the availability of educational materials for school children.

In the West Bank village of Al-Kaabneh, a settlement in the Palestinian territory about 40 km southeast of Hebron which has never had electricity or running water, a solar-powered system is running an ultraviolet water purifier, a vaccine cooler, a computer, a fax machine, a copy machine and a digital cellular antenna for access to data networks. The project--run partly by Greenstar, a not-for-profit organization that brings telemedicine, distance learning and e-commerce to areas where electrical power grids are unavailable--was one of the first to use a combination of solar

power and wireless communications to link a rural population with the rest of the world.

In its report on the information divide the U.N. argues that more innovation is needed to adapt technology to the needs of the world's poorest and remotest regions. High on the priority list are personal computers powered by solar strips or wind-up drives that are resistant to sand and humidity, software for touch screens to allow usage by a wider audience, and prepaid chip card software for electronic commerce. But who will pay for this new technology? One idea suggested in the U.N.'s Human Development Report is a technology tax based on the number of bits in every electronic communication, a proposal that is being strongly contested by the U.S. government. The money from the tax, which would amount to 1[cent] on every 1,000 kilobytes--roughly the equivalent of a 40-page document, or 100 e-mails each carrying a 10-kilobyte attachment--would generate billions of dollars that could be pooled into a global fund and used to bring telecommunications technology to the developing world.

Regardless of the funding mechanism, though, governments and development agencies agree that they must better coordinate their efforts to attract private sector interest in projects with only long-term prospects for return on investment. This month's U.N. African Development Forum, taking place in Addis Ababa, Ethiopia, "needs to lead to an era in which Africa defines the agenda and makes sure programs are more action-oriented," says Kate Wild, the forum's coordinator.

But critics suggest that governments and development agencies are placing too much emphasis on technology. What good are telecenters if villagers don't have the basic necessities for success in the global marketplace? Financial credit, employment skills and other types of "low" technology are also needed for real change. An obsession with technological progress could also divert attention from the important political, economic and social progress that still has to be made. Information technology could go a long way toward improving the lot of people in the developing world, but only if the hardware is accompanied by local content, the knowledge of how to use it well and parallel societal and economic changes.

GRAPHIC: COLOR PHOTO:
CHARLES GAY-- GREENSTAR FOUNDATION
THE RIGHT CONNECTIONS

Solar cells power a computer and wireless network in the West Bank village of Al-Kaabneh,
top, and could help spur e-commerce in Africa

COLOR PHOTO: ISSOUF SANOGO--AFP, [See caption above]